AIR MANAGING SYSTEMS AND METHODS FOR GAS DEPOLARIZED POWER SUPPLIES UTILIZING A DIAPHRAGM

Abstract of the Disclosure

Air managers for gas depolarized power supplies such as metal-air batteries or fuel cells are described utilizing a resilient diaphragm moving in one direction by the force of an electromagnetic field and in the opposite direction by the resiliency of the diaphragm. The movement of the diaphragm causes air to be exchanged between the interior of the casing adjacent to the air electrode and exterior of the casing through the ventilation passageway. An electrical circuit may be employed containing a pair of contacts with one of the contacts connected to the diaphragm. The contacts are closed when the current flow through the coil is less than a predetermined level, however, when the current flow through the coil is greater than a predetermined level, the diaphragm moves. As the diaphragm moves, the contacts are opened, thus breaking the circuit, de-energizing the coil, and allowing the resiliency of the diaphragm to return it to the original position and remaking the circuit. The de-energizing and re-energizing of the coil may be repeated to cause the diaphragm to oscillate. The metal-air power supply may have two modes of operation drawing different levels of current from the power supply. In this case, the passageway permits a predetermined low flow rate of air from the

exterior to the interior of the casing adjacent to an air electrode of the cell during a low current draw mode of operation while the air mover is inoperative. The air mover, however, becomes operative responsive to the initiation of a high current draw mode of operation.